

Application No.: 09/581,878
Attorney Docket No.: FUK-71
Amendment Dated: 8 August 2005
Reply for Final Office Action Dated: 7 February 2005

AMENDMENTS TO THE CLAIMS

1. (CURRENTLY AMENDED) A semiconductor manufacturing apparatus for processing a substrate surface, said apparatus comprising:

a vacuum vessel having ~~[[a]]~~ an upper vacuum vessel plate
5 and a lower vacuum vessel plate;

a substrate stage fixedly provided on said lower vacuum vessel plate~~[[,]]~~ ~~said substrate stage having an operatively immovable substrate receiving portion;~~

a cylinder installed surrounding said substrate stage, a
10 gap existing between said cylinder and said upper vacuum vessel plate, said gap being made variable by lifting/lowering said cylinder, said cylinder having a cylinder interior space and a cylinder exterior space associated therewith, said cylinder interior space defining a processing chamber for processing said
15 substrate surface, said cylinder exterior space including a transport chamber for transferring said substrate;

a bellows extending between said cylinder and said lower vacuum vessel plate;

an O-ring disposed on said cylinder;

20 at least one cylinder lifting/lowering mechanism being
operatively associated with said cylinder;

 a substrate conveyer mechanism provided with said transport
chamber, said substrate conveyer mechanism for transferring said
substrate between said processing chamber and said transport
25 chamber through said gap;

 said processing chamber being provided with a processing
chamber gas inlet and a processing chamber gas outlet; and

 said transport chamber being provided with a transport
chamber gas inlet and a transport chamber gas outlet.

2. (CURRENTLY AMENDED) A semiconductor manufacturing
apparatus for processing a substrate surface, the apparatus
composed of a vacuum vessel with a top and bottom plate, said
apparatus comprising:

5 a plurality of substrate stages fixedly provided on said
vacuum vessel bottom plate[[,]] ~~each of said substrate stages~~
~~respectively having an operatively immovable substrate receiving~~
~~portion;~~

 a plurality of cylinders each provided respectively with an
10 O ring disposed on the cylinder associated therewith, each
cylinder being connected to said bottom plate through a

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respective bellows so as to surround a respective said substrate stage, said cylinders forming a gap with said vacuum vessel top plate, a gap between said cylinder and said vacuum vessel top plate being made variable by lifting/lowering said cylinder, and
15 at a position where said gap becomes minimum, a plurality of cylinder lifting/lowering mechanisms operatively associated with said cylinder being provided, in order to hermetically separate an interior space inside said cylinder from an exterior space
20 outside thereof, said interior space forming a processing chamber for processing said substrate surface, the exterior space defining a transport chamber for transferring said substrate;

said transport chamber being provided with a substrate
25 conveyer mechanism for transferring said substrate between said processing chamber and said transport chamber through said gap;

said processing chamber being provided with a processing chamber gas inlet and a processing chamber gas outlet; and

said transport chamber being provided with a transport
30 chamber gas inlet and a transport chamber gas outlet.

3. (PREVIOUSLY PRESENTED) The semiconductor manufacturing apparatus according to Claim 1, wherein said vacuum vessel

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having a modular configuration, the modular configuration including a first modular unit having said processing chamber and a second modular unit having said substrate transport mechanism.

4. (PREVIOUSLY PRESENTED) The semiconductor manufacturing apparatus according to Claim 1, further comprising a plasma generation mechanism for generating plasma in said processing chamber.

5. (PREVIOUSLY PRESENTED) The semiconductor manufacturing apparatus according to Claim 4, wherein said plasma generation mechanism radiates microwave energy through a slot antenna.

6. (ORIGINAL) The semiconductor manufacturing apparatus according to Claim 4, wherein a plurality of cylindrical permanent magnets are disposed substantially on the circumference surrounding the substrate in the atmosphere outside said vacuum vessel, in order to impress magnetic field around said substrate.

7. (PREVIOUSLY PRESENTED) The semiconductor manufacturing apparatus according to any one of Claims 1 to 6, wherein said substrate stage is provided with a means for impressing direct current or alternating current power.

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8. (PREVIOUSLY PRESENTED) The semiconductor manufacturing apparatus according to Claim 2, wherein said vacuum vessel having a modular configuration, the modular configuration including a first modular unit having said processing chamber and a second modular unit having said substrate transport mechanism.

9. (PREVIOUSLY PRESENTED) The semiconductor manufacturing apparatus according to Claim 2 comprising a plasma generation mechanism for generating plasma in said processing chamber.

10. (PREVIOUSLY PRESENTED) The semiconductor manufacturing apparatus according to Claim 3 comprising a plasma generation mechanism for generating plasma in said processing chamber.

11. (CANCELED)

12. (CURRENTLY AMENDED) The semiconductor manufacturing apparatus according to Claim 1, wherein said substrate stage having a substrate receiving portion at an upper end thereof to operably receive a substrate for processing, said substrate receiving portion being fixedly and permanently stationarily disposed relative to said vacuum vessel lower plate ~~the immovable substrate receiving portion of said substrate stage defining an upper end of said substrate stage.~~

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13. (CURRENTLY AMENDED) The semiconductor manufacturing apparatus according to Claim 2, wherein each substrate stage having a respective substrate receiving portion at an upper end thereof to operably receive a respective substrate for processing, each respective said substrate receiving portion being fixedly and permanently stationarily disposed relative to said vacuum vessel bottom plate ~~the respective immovable substrate receiving portion of each substrate stage defining an upper end of said substrate stage associated therewith.~~

14. (NEW) The semiconductor manufacturing apparatus according to Claim 12, wherein said substrate stage being fixedly provided at a lower end thereof on said vacuum vessel lower plate, the upper end of said substrate stage being fixedly and permanently stationarily disposed on the lower end of said substrate stage.

15. (NEW) The semiconductor manufacturing apparatus according to Claim 13, wherein each said substrate stage being fixedly provided at a lower end thereof on said vacuum vessel bottom plate, the respective upper end of each said substrate stage being fixedly and permanently stationarily disposed on the respective lower end of said respective substrate stage.